

## CLAIMS

### What is claimed is:

1. A method of diagnosing voices comprising:  
processing a test voice signal using an auditory model;  
determining at least one voice quality attribute from the test voice signal;  
comparing the at least one voice quality attribute from the test voice signal with at least one baseline voice quality attribute; and  
based upon said comparing step, determining at least one measure of voice quality of the test voice signal.
2. The method of claim 1, further comprising determining a degree of the measure of voice quality.
3. The method of claim 1, wherein the measure of voice quality is at least one of roughness and hoarseness.
4. The method of claim 3, wherein the voice quality attributes of the test voice signal include changes in pitch over time and changes in loudness over time.
5. The method of claim 4, wherein the voice quality attribute of the test voice signal includes a measure of partial loudness.
6. The method of claim 1, wherein the measure of voice quality is breathiness.
7. The method of claim 6, wherein the voice quality attribute of the test voice signal includes a measure of low frequency periodic energy.
8. The method of claim 6, wherein the voice quality attribute of the test voice signal includes a measure of high frequency aperiodic energy.

9. The method of claim 6, wherein the voice quality attribute of the test voice signal includes a measure of partial loudness of a periodic signal portion of the test voice signal.
10. The method of claim 6, wherein the voice quality attributes of the test voice signal include a measure of noise in the test voice signal and a measure of partial loudness of the test voice signal.
11. A system for diagnosing voices comprising:
  - means for processing a test voice signal using an auditory model;
  - means for determining at least one voice quality attribute from the test voice signal;
  - means for comparing the at least one voice quality attribute from the test voice signal with at least one baseline voice quality attribute; and
  - means for determining at least one measure of voice quality of the test voice signal based upon said means for comparing.
12. The system of claim 11, further comprising means for determining the degree of the measure of voice quality.
13. The system of claim 11, wherein the measure of voice quality is at least one of roughness and hoarseness.
14. The system of claim 13, wherein the voice quality attributes of the test voice signal include changes in pitch over time and changes in loudness over time.
15. The system of claim 14, wherein the voice quality attribute of the test voice signal includes a measure of partial loudness.
16. The system of claim 11, wherein the measure of voice quality is breathiness.

17. The system of claim 16, wherein the voice quality attribute of the test voice signal includes a measure of low frequency periodic energy.

18. The system of claim 16, wherein the voice quality attribute of the test voice signal includes a measure of high frequency aperiodic energy.

19. The system of claim 16, wherein the voice quality attribute of the test voice signal includes a measure of partial loudness of a periodic signal portion of the test voice signal.

20. The system of claim 16, wherein the voice quality attributes of the test voice signal include a measure of noise in the test voice signal and a measure of partial loudness of the test voice signal.

21. A machine readable storage, having stored thereon a computer program having a plurality of code sections executable by a machine for causing the machine to perform the steps of:

- processing a test voice signal using an auditory model;
- determining at least one voice quality attribute from the test voice signal;
- comparing the at least one voice quality attribute from the test voice signal with at least one baseline voice quality attribute; and
- based upon said comparing step, determining at least one measure of voice quality of the test voice signal.

22. The machine readable storage of claim 21, further comprising determining the degree of the measure of voice quality.

23. The machine readable storage of claim 21, wherein the measure of voice quality is at least one of roughness and hoarseness.

24. The machine readable storage of claim 23, wherein the voice quality attributes of the test voice signal include changes in pitch over time and changes in loudness over time.

25. The machine readable storage of claim 24, wherein the voice quality attribute of the test voice signal includes a measure of partial loudness.

26. The machine readable storage of claim 21, wherein the measure of voice quality is breathiness.

27. The machine readable storage of claim 26, wherein the voice quality attribute of the test signal includes a measure of low frequency periodic energy.

28. The machine readable storage of claim 26, wherein the voice quality attribute of the test voice signal includes a measure of high frequency aperiodic energy.

29. The machine readable storage of claim 26, wherein the voice quality attribute of the test voice signal includes a measure of partial loudness of a periodic signal portion of the test voice signal.

30. The machine readable storage of claim 26, wherein the voice quality attributes of the test voice signal include a measure of noise in the test voice signal and a measure of partial loudness of the test voice signal.